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L6: Entry 1 of 1

File: DWPI

Aug 10, 1999

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TITLE: Display controller for communication terminal equipment e.g. notebook PC, portable telephone - has touch panel input unit which inputs display control signal, based on which display condition of display unit is controlled

PATENT-ASSIGNEE: SANYO ELECTRIC CO LTD (SAOL)

PRIORITY-DATA: 1998JP-0021684 (February 3, 1998)

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PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
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APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 11220523A	February 3, 1998	1998JP-0021684	

INT-CL (IPC): G06 F 3/033; H04 M 1/23; H04 M 1/274

ABSTRACTED-PUB-NO: JP 11220523A

BASIC-ABSTRACT:

NOVELTY - A touch panel input unit (3a) provided to side of a communication terminal equipment, inputs display control signal, based on which display condition of display unit (2) is controlled.

USE - For communication terminal equipment e.g. notebook PC, portable telephone.

ADVANTAGE - By the help of touch panel input, various information can be input by simple operation using thumb. DESCRIPTION OF DRAWING(S) - The figure shows the exterior perspective diagram of communication terminal equipment. (2) Display unit; (3a) Touch panel input unit.

ABSTRACTED-PUB-NO: JP 11220523A

EQUIVALENT-ABSTRACTS:

CHOSEN-DRAWING: Dwg.2/8

DERWENT-CLASS: T01 W01

EPI-CODES: T01-C02B1; W01-C01B; W01-C01B8;

[MENU](#) [SEARCH](#) [INDEX](#) [DETAIL](#) [JAPANESE](#)

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PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-220523

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(71)Applicant : SANYO ELECTRIC CO LTD

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KIYOTA KENJI

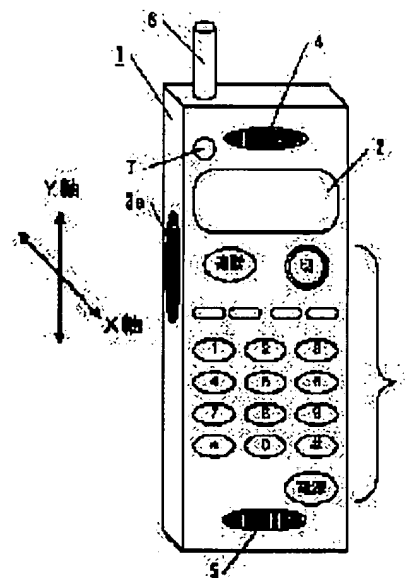
(54) COMMUNICATION TERMINAL

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a communication terminal such that operability is improved, destruction of an entry section is prevented and its external appearance is freely designed without restrictions in design.

SOLUTION: This communication terminal main body 1 is provided with a display device that displays various information, a key entry section 3 that includes a speech key, an interrupt key, a power key and ten-keys, a reception loudspeaker 4, a transmission microphone 5, an antenna 6 and an LED 7. Moreover, the inside of the main body 1 is provided with a vibrator and a built-in speaker. The vibrator is vibrated and the built-in speaker sounds a 'pi pi' sound and the LED 7 is lighted in

response to an input signal from a touch panel entry device 3a having a mouse entry function to provide a sense of operation. The touch panel entry device 3a provides an output of a signal denoting the presence of contact to its entry plane and a moving amount and a moving direction of a part which is in contact with the input plane. Then the touch panel entry device 3a will give no design restriction for the design of the communication terminal.



LEGAL STATUS

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CLAIMS

[Claim(s)]

[Claim 1] The communication terminal which is a communication terminal and is characterized by providing the display which displays the various information prepared in the transverse plane of said communication terminal, the touch panel input means formed in the side face of said communication terminal in order to input a display-control signal, and a display-control means to control the display condition of said display based on the display-control signal which said touch panel input means inputs.

[Claim 2] It is the communication terminal characterized by said touch panel input means inputting at least one display-control signal into said display-control means among the display-control signals of a publication in a communication terminal according to claim 1 at either following (a) thru/or (c).

(a) The display-control signal which shows the existence of the contact to said touch panel input means.

(b) The display-control signal which shows the movement magnitude of the part in contact with said touch panel input means.

(c) The display-control signal which shows the migration direction of the part in contact with said touch panel input means.

[Claim 3] The communication terminal characterized by providing a feeling generating means of actuation to give the operator of said communication terminal a feeling of actuation in a communication terminal according to claim 1 or 2 based on the display-control signal which said touch panel input means inputs.

[Claim 4] It is the communication terminal characterized by said feeling generating means of actuation making either following (a) thru/or (c) produce the thing of a publication in a communication terminal according to claim 3.

(a) Sound (b) oscillating (c) light [claim 5] The communication terminal characterized by providing the touch panel input means which was a communication terminal, and was formed in the side face of said communication terminal in order to input a control signal, and the control means which controls said communication terminal based on the control signal which said touch panel input means inputs.

[Claim 6] The communication terminal characterized by providing a feeling generating means of actuation to give the operator of said communication terminal a feeling of actuation in a communication terminal according to claim 5 based on the control signal which said touch panel input means inputs.

[Claim 7] It is the communication terminal characterized by said feeling generating means of actuation making either following (a) thru/or (c) produce the thing of a publication in a communication terminal according to claim 6.

(a) Sound (b) oscillating (c) light

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a communication terminal and relates to the communication terminal which improved operability, such as telephone number selection, call origination actuation, and telephone number registration, in more detail.

[0002]

[Description of the Prior Art] In the conventional communication terminal, since it corresponds to the demand of multi-functionalization, many function keys which carry out the assignment input of the function are formed, and it is in the inclination which vigor equipment itself enlarges. However, since in addition to the demand of multi-functionalization the user of a communication terminal has advanced a conflicting requirement called the further formation of small lightweight and corresponds to it, the jog dial generally adopted with a video editor or various remote control is prepared as an information input means, and the equipment which improves operability is proposed and put in practical use (JP,8-79360,A etc.).

[0003] In this communication terminal, it matches with the click and double click actuation in a mouse input device by rotating a jog dial in the vertical direction by performing vertical migration of a display screen or selections, and pushing a jog dial on radial [that].

[0004]

[Problem(s) to be Solved by the Invention] however, the structure where a jog dial projects outside from the need of carrying out dial actuation, in this conventional communication terminal more nearly inevitably than the body of equipment -- not becoming -- when not obtaining, consequently carrying a communication terminal, an external shock joined the jog dial directly, and there was a trouble that the destruction of the worst jog dial the contact surface of a jog dial, the encoder section, and own occurred frequently.

[0005] Furthermore, it was impossible to have offered the communication terminal with which the design which is full of the fashion sense which will receive design-constraint on the relation which prepares a jog dial, and matched the time was given. Destruction of the input section does not occur but it aims at offering the communication terminal which design-constraint is not received and can carry out a free appearance design while this invention is made in order to solve the above-mentioned trouble, and it improves operability.

[0006]

[Means for Solving the Problem] The communication terminal of this invention concerning claim 1 is characterized by to provide the display which displays the various information prepared in the transverse plane of said communication terminal, the touch panel input means which were formed in the side face of said communication terminal in order to input a display-control signal, and a display-control means control the display condition of said display based on the display-control signal which said touch panel input means inputs, in order to attain the above-mentioned purpose.

[0007] The communication terminal of this invention concerning claim 2 is characterized by inputting at

least one display-control signal into said display-control means among the display-control signals of a publication at either following (a) thru/or (c) by said touch panel input means in a communication terminal according to claim 1.

(a) The display-control signal which shows the existence of the contact to said touch panel input means.

[0008] (b) The display-control signal which shows the movement magnitude of the part in contact with said touch panel input means.

(c) The display-control signal which shows the migration direction of the part in contact with said touch panel input means.

The communication terminal of this invention concerning claim 3 is characterized by providing a feeling generating means of actuation to give the operator of said communication terminal a feeling of actuation based on the display-control signal which said touch panel input means inputs in a communication terminal according to claim 1 or 2.

[0009] The communication terminal of this invention concerning claim 4 is characterized by said feeling generating means of actuation making either following (a) thru/or (c) produce the thing of a publication in a communication terminal according to claim 3.

(a) The communication terminal of this invention concerning (sound b) (oscillating c) light claim 5 is characterized by providing the touch panel input means formed in the side face of said communication terminal, and the control means which controls said communication terminal based on the control signal which said touch panel input means inputs, in order to input a control signal.

[0010] The communication terminal of this invention concerning claim 6 is characterized by providing a feeling generating means of actuation to give the operator of said communication terminal a feeling of actuation based on the control signal which said touch panel input means inputs in a communication terminal according to claim 5. The communication terminal of this invention concerning claim 7 is characterized by said feeling generating means of actuation making either following (a) thru/or (c) produce the thing of a publication in a communication terminal according to claim 6.

[0011] (a) Sound (b) oscillating (c) light [0012]

[Embodiment of the Invention] The gestalt of operation of this invention is explained to a detail with a drawing. Our company already put in practical use notebook computer MBC-S770 (henceforth "Note PC") incorporating the touch panel input unit which realizes a mouse function, and has put it on the market. Drawing 1 is the important section external view of the note PC of our company.

[0013] 100 is a body of note PC and the touch panel input unit 102 is formed in the lower part of a keyboard 101. The touch panel input unit 102 realizes the function of a mouse input unit by itself, moves the mouse pointer and cursor which were displayed on Screen 103, or performs selection and program starting of a display object.

[0014] When moving a mouse pointer and cursor, as shown in drawing, an operator places so that the location of the arbitration on the input screen of the touch panel input unit 102 may be first touched with one finger lightly, and lets a finger slide in the direction to make it move. Then, once it strikes quickly the input screen of the touch panel input unit 102, it will become click actuation, and similarly, if it strikes twice quickly, it will become double click actuation. After choosing a desired display object by click actuation, immediately, the drag actuation to which the selected object is moved on Screen 103 attaches a finger to the input screen of the touch panel input unit 102, and can be realized by letting a finger slide in the direction making it move.

[0015] Drawing 2 is the appearance perspective view of the communication terminal concerning this invention. 1 is a body of a communication terminal and the key input section 3 containing the display 2 which displays various information, the speaking key which directs hook control at the time of call origination and a call in, the cutting key which directs termination of a message, a power-source key, a ten key, or various functional manual operation buttons, the receiver loudspeaker 4, the transmission microphone 5, an antenna 6, and LED7 are formed. Moreover, vibrator and a built-in loudspeaker (not shown [both]) are prepared in the interior of the body 1 of a communication terminal, and in order to give the operator of equipment a feeling of actuation, according to the input signal from the touch panel input unit mentioned later, a sound called vibration, and "PITSU and PITSU" is generated. Moreover,

LED7 emits light similarly according to the input signal from a touch panel input unit.

[0016] Especially 3a is a touch panel input unit which has an above-mentioned mouse input function, and in consideration of an operator's operability, when the body 1 of a communication terminal is grasped with the left hand, it is prepared in the location to which the left thumb comes. Possible [designing freely according to the configuration of the body 1 of a communication terminal] consequently, an unnecessary lug etc. does not occur and this touch panel input-device 3a does not give design-constraint on the occasion of the design of a communication terminal.

[0017] Touch panel input-device 3a moves the mouse pointer and cursor which were displayed on the display 2 in the direction of arbitration like the above-mentioned touch panel input device 102, or performs selection directions of a display object etc., and outputs the signal which shows the movement magnitude and the migration direction of a part which contacted the existence of the contact to the input screen of touch panel input-device 3a in the input screen.

[0018] In moving a mouse pointer and cursor using touch panel input-device 3a, it places so that touch panel input-device 3a may be lightly touched with the thumb, and lets a finger slide in the direction (namely, the direction of the arbitration on XY flat surface of drawing) to make it move. Then, once it strikes quickly the input screen of touch panel input unit 3a, it will become click actuation, and similarly, if it strikes twice quickly, it will become double click actuation. After choosing a desired display object by click actuation, the drag actuation to which the selected object is moved on a display 2 attaches a finger to the input screen of touch panel input unit 3a, and is performed by letting a finger slide in the direction making it move. However, touch panel input unit 3a which the communication terminal 1 concerning this invention possesses does not need to realize a mouse function completely, and when complicated actuation is unnecessary, the migration direction of a mouse or cursor is only a vertical one direction (namely, Y shaft orientations of drawing), and it just performs click actuation and double click actuation. Moreover, as touch panel input unit 3a, although various things, such as a pressure-sensitive type and an electrostatic formula, exist, the touch panel input unit used for the communication terminal concerning this invention does not limit the class.

[0019] Drawing 3 is the block diagram of the communication terminal concerning this invention. 10 is a body of a communication terminal (shown within a drawing destructive line) which performs telephone, facsimile communication, and data communication. 12 is the wireless section which restores to the radio signal received by the antenna 11, and modulates a sending signal at the time of transmission.

[0020] 13 is the TDMA processing section which performs Time Division Multiplexing. 14 is the digital-signal-processing section which performs various processings to the digital signal used for a communication link. 15 is an AD/DA transducer which consists of A/D converters, D/A converters, etc. which perform an exchange of the digital-signal-processing section 14, the receiver loudspeaker 16 and the transmission microphone 17, and a signal.

[0021] 18 is the system control section which controls the whole communication terminal, and controls the communication link of call origination, a call in, etc., and the condition inside equipment based on the various control signals inputted from the control unit 19 mentioned later, and the control signal from the TDMA processing section or the digital-signal-processing section. Especially the system control section 18 controls the feeling generating section 21 of actuation which consists of the display conditions, LED, vibrator, and built-in loudspeakers of the display 20 which consists of a liquid crystal display which displays various information based on the display-control signal inputted from touch panel input section 19b.

[0022] 19 is a control unit which inputs information required for the system control section 18, and consists of touch panel input section 19b which has key input section 19a and the mouse input function containing the speaking key which directs hook control at the time of call origination and a call in, the cutting key which directs termination of a message, a power-source key, a ten key, or various functional manual operation buttons. Next, the input operation by the touch panel input section which the communication terminal concerning this invention possesses is explained using drawing 3 and drawing 4 thru/or drawing 8.

[0023] Drawing 4 and drawing 5 are the enlarged drawings of a display 20, and show the change

condition of the display screen by touch panel input section 19b which has a full mouse function (movable [in the direction of arbitration] in a mouse pointer or cursor). 20c from 20a displayed on a display 20 and 20P1 to 20P3 If it is an icon for starting a program, for example, mouse pointer 20MP has pointed out icon 20a in drawing 4 (A) and touch panel input section 19b is double-clicked in this condition The system control section 18 makes telephone connection automatically at "Mr. A" by recognizing that starting directions were carried out and starting the program of icon 20a. Moreover, if mouse pointer 20MP moves, icon 20c is pointed out, as it is shown in drawing 4 (B), when it places so that touch panel input section 19b may be lightly touched with the thumb, and it lets a finger slide downward (namely, Y-axis down of drawing 2), and touch panel input section 19b is double-clicked in this condition, the program of icon 20c will start and telephone connection will be made automatically at "the C." Moreover, if touch panel input section 19b is clicked in the state of drawing 4 (B), icon 20c is chosen (condition which icon 20a discolored), and the location of icon 20c can be succeedingly changed by drag actuation. In addition, the system control section 18 gives the operator of a communication terminal a feeling of actuation by generating the sound "PITSU and PITSU" from a built-in loudspeaker while making LED7 emit light, when icon 20b and icon 20c are reached on the occasion of the migration to icon 20c of mouse pointer 20MP from icon 20a. Moreover, you may make it vibrate vibrator synchronizing with this.

[0024] An operator operates touch panel input section 19b, from the initial state of drawing 5 (A), if drawing 5 (B) shows the condition of having moved mouse pointer 20MP to icon 20P3 and touch panel input section 19b is double-clicked in this condition, the application program registered into icon 20P3 will start it, for example, when it is facsimile communication software, it will be in the condition in which facsimile communication is possible automatically.

[0025] Drawing 6 and drawing 7 are the enlarged drawings of a display 20 (however, since a doubt does not arise, a number is not given to drawing), and show the change condition of the screen in the case of performing abbreviation-dial registration. In addition, touch panel input section 19b which has an one direction mouse function (movable [only in the vertical direction] in a mouse pointer or cursor) is used for abbreviation-dial register operation.

[0026] If an operator operates the ten key contained in key input section 19a, inputs the telephone number (refer to drawing 6 (A)) and clicks touch panel input section 19b, it will be in the display condition of drawing 6 (A), and the inverse video of "HASSHIN" will be carried out and it will become a selection ordinary state. if it places so that touch panel input section 19b may be lightly touched with the thumb, and it lets a finger slide downward -- "-- the inverse video of tow good" is chosen and carried out (refer to drawing 6 (C)). If touch panel input section 19b is clicked from this condition, the input screen of an abbreviation-dial number will be displayed (refer to drawing 6 (D)). If it lets the finger put on touch panel input section 19b slide towards a vertical request, the number which is not used among the abbreviation-dial numbers from No.001 to 999 will be displayed in order corresponding to the migration direction of a finger (refer to drawing 6 (E)). For example, when a desired abbreviation-dial number is No.003, after changing into the condition which shows in drawing 6 (E), the input screen of group registration is displayed as a click in touch panel input section 19b (refer to drawing 6 (F)). For example, when registering with the "Eugene" group, it lets downward the finger with which touch panel input section 19b was touched slide, the inverse video of "3:Eugene" is carried out (refer to drawing 6 (G)), it is registered by clicking touch panel input section 19b succeedingly, and the purport which registration finally completed is displayed (refer to drawing 6 (H)). The system control section 18 gives the operator of a communication terminal a feeling of actuation by generating the sound "PITSU and PITSU" from a built-in loudspeaker while making LED7 emit light on the occasion of migration of selections. Moreover, you may make it vibrate vibrator synchronizing with this.

[0027] In addition, it shifts to drawing 6 (G) through the display condition shown in drawing 7 (D) from drawing 7 (A) from drawing 6 (F). It is shown that the inverse video of the "0:pear" is carried out, and the display condition of drawing 7 (A) has it in a selection ordinary state. If touch panel input section 19b is lightly touched with the thumb and it lets it slide downward, the inverse video (refer to drawing 7 (B)) of "1:SHINSEKI" will be chosen and carried out, and if it lets the thumb slide downward further,

the inverse video of "2:KAISHA" will be chosen and carried out (refer to drawing 7 (C)). If it lets the thumb slide downward further from this condition, a display screen will scroll automatically, and the inverse video of "3:Eugene" will be chosen and carried out (refer to drawing 7 (D)).

[0028] Drawing 8 is the enlarged drawing of a display 20, and shows the change condition of a screen in case an abbreviation dial (No.003 registered by the above-mentioned actuation) performs call origination. In addition, touch panel input section 19b which has an one direction mouse function is used for abbreviation-dial call origination actuation. If an operator places from the power save condition (condition which eliminates a screen display automatically when not operating a communication terminal beyond predetermined time) of drawing 8 (A) so that touch panel input section 19b may be lightly touched with the thumb, a power save condition will be canceled and abbreviation-dial No.001 and the registered telephone number of those will be displayed (refer to drawing 8 (B)). Furthermore, if it lets upward the finger put on touch panel input section 19b slide, it will continue at the display (refer to drawing 8 (C)) of abbreviation-dial No.002, and desired abbreviation-dial No.003 and the registered desired telephone number of those will be displayed (refer to drawing 8 (D)). If touch panel input section 19b is clicked, the display screen changes, the inverse video of "HASSHIN" is carried out and it will be in a selection condition (refer to drawing 8 (E)). Furthermore, if touch panel input section 19b is clicked, it will be in the display condition of drawing 8 (F), and according to a predetermined communications protocol, it will connect with the other party after call origination at the telephone number "0584123456" by which inverse video was carried out automatically, and conversation will become possible. In addition, it says that a series of call origination actuation by this abbreviation dial touches touch panel input section 19b with the thumb lightly, lets a finger slide in the vertical direction, and double-clicks with the thumb, and an operator becomes possible [connecting with the desired telephone number by very easy actuation].

[0029]

[Effect of the Invention] Since the touch panel input means was formed in the side face of the body of equipment like according to the communication terminal concerning this invention explained above, an operator can perform information inputs various only by the easy actuation with the thumb. Moreover, the touch panel input means adopted as the communication terminal concerning this invention does not have an unnecessary lug, and since an external shock concentrates and is not added, destruction of the input section does not generate it.

[0030] Furthermore, since a touch panel input means can process a desired configuration, design-constraint is not given on the occasion of the appearance design of a communication terminal.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the important section external view of the note PC of our company.

[Drawing 2] It is the appearance perspective view of the communication terminal concerning this invention.

[Drawing 3] It is the block diagram of the communication terminal concerning this invention.

[Drawing 4] It is the enlarged drawing of a display 20.

[Drawing 5] It is the enlarged drawing of a display 20.

[Drawing 6] It is the enlarged drawing of a display 20.

[Drawing 7] It is the enlarged drawing of a display 20.

[Drawing 8] It is the enlarged drawing of a display 20.

[Description of Notations]

1 Body of Communication Terminal

2 Display

3 Key Input Section

3a Touch panel input unit

10 Body of Communication Terminal

18 System Control Section

19 Control Unit

19a Key input section

19b Touch panel input section

20 Display

102 Touch Panel Input Unit

[Translation done.]

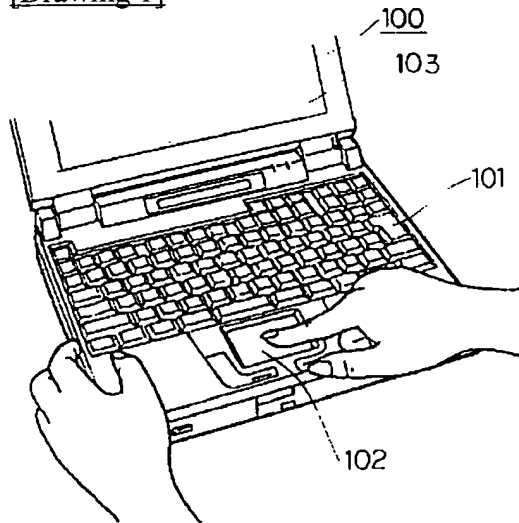
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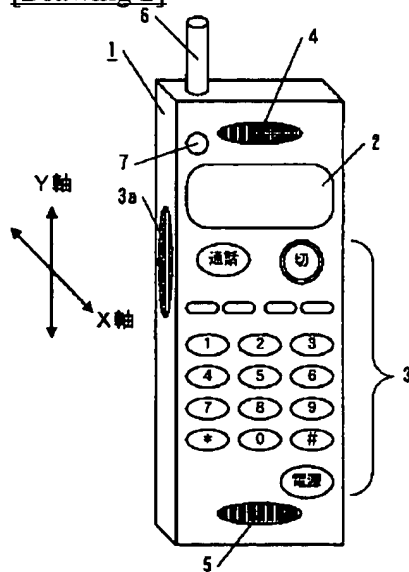
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DRAWINGS

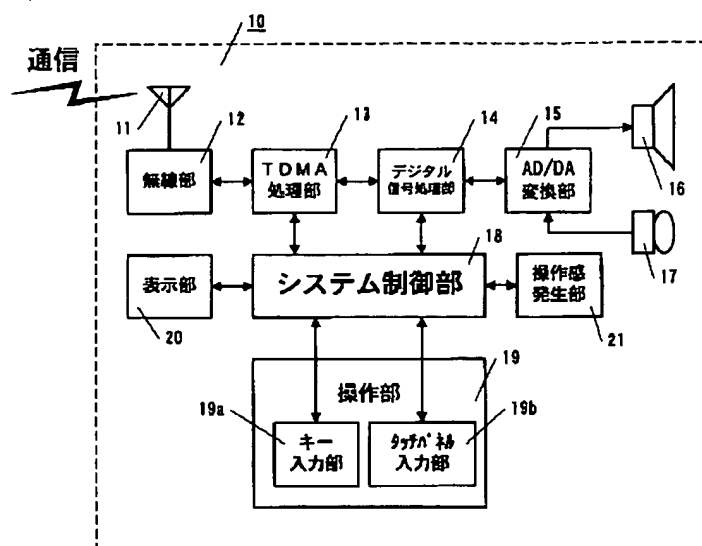
[Drawing 1]



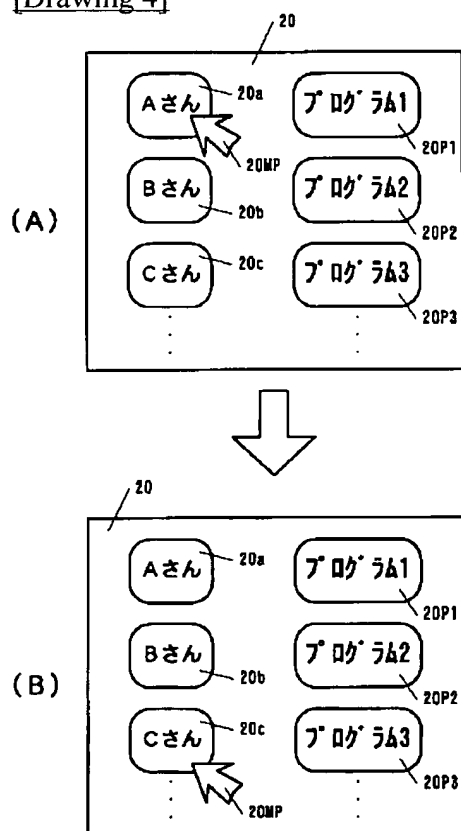
[Drawing 2]



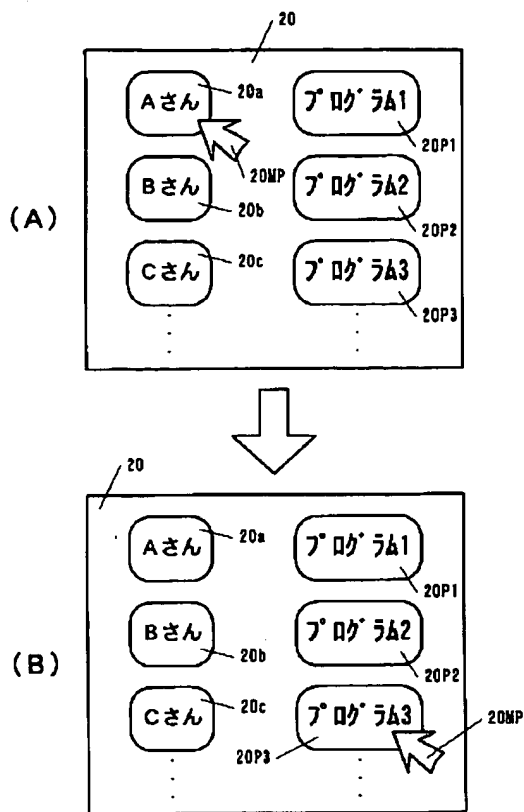
[Drawing 3]



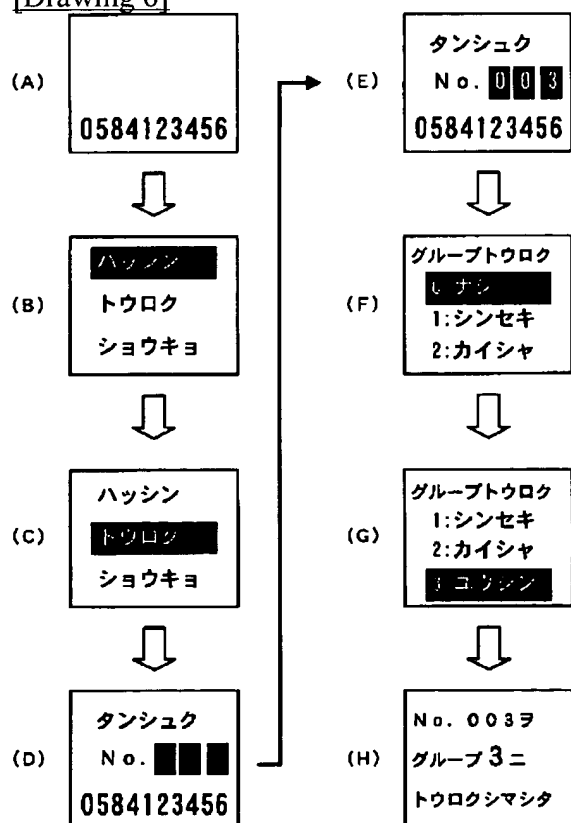
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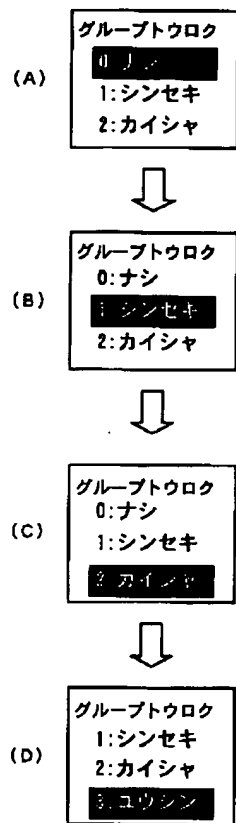
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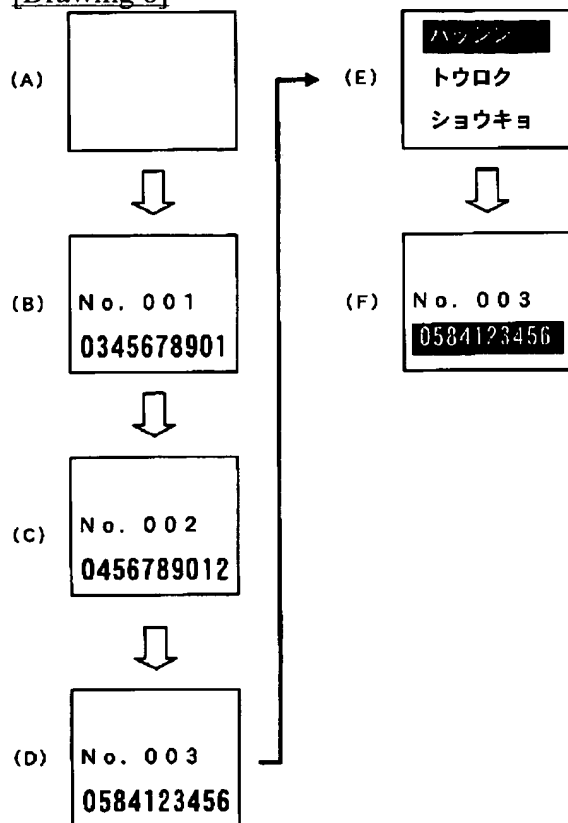
[Drawing 6]



[Drawing 7]



[Drawing 8]



[Translation done.]

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SANYO ELECTRIC CO LTD

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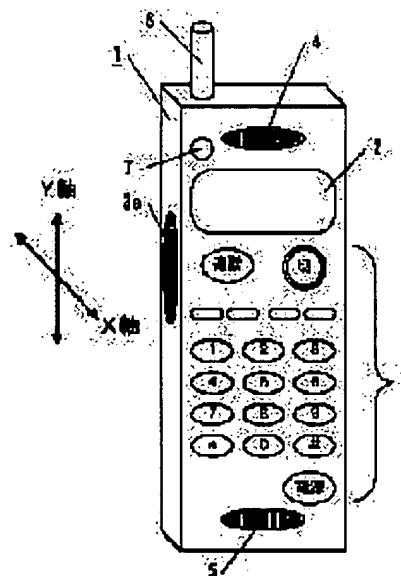
(72)Inventor : SATO MICHIAKI
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KIYOTA KENJI

(54) COMMUNICATION TERMINAL

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a communication terminal such that operability is improved, destruction of an entry section is prevented and its external appearance is freely designed without restrictions in design.

SOLUTION: This communication terminal main body 1 is provided with a display device that displays various information, a key entry section 3 that includes a speech key, an interrupt key, a power key and ten-keys, a reception loudspeaker 4, a transmission microphone 5, an antenna 6 and an LED 7. Moreover, the inside of the main body 1 is provided with a vibrator and a built-in speaker. The vibrator is vibrated and the built-in speaker sounds a 'pi pi' sound and the LED 7 is lighted in response to an input signal from a touch panel entry device 3a having a mouse entry function to provide a sense of operation. The touch panel entry device 3a provides an output of a signal denoting the presence of contact to its entry plane and a moving amount and a moving direction of a part which is in contact with the input plane. Then the touch panel entry device 3a will give no design restriction for the design of the communication terminal.



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